CALIFORNIA COASTAL COMMISSION DRAFT SEA-LEVEL RISE POLICY GUIDANCE

10 September 2014

Coastal Engineering Research Board Meeting

CALIFORNIA COASTAL COMMISSION

Overview of Presentation

- California Coastal Commission and Coastal Act
- Coastal Commission's Draft Sea Level Rise Policy Guidance
  - Planning Guidance for Local Coastal Programs
  - Permit Guidance for Coastal Development Permits
- Next Steps for the Draft Sea Level Rise Guidance
- Identified Research Needs

McGrath State Beach | www.caopensapce.org

Oxnard Beach | Flickr user Surfingsanders

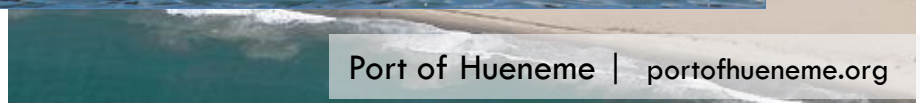
Oxnard Shores Mobile Home Park | California Coastal Records Project

Oxnard Farm Fields

Reliant Ormand Beach Generating Station | California Coastal Records Project

Rincon Beach, Ventura, CA | Dec 2012

David Powdrell



Port of Hueneme | portofhueneme.org

Ormand Beach Wetlands| Sierra Club

Contents of the Draft Document

Executive Summary

Main Report

Chapter 1: Introduction
Chapter 2: Guiding Principles
Chapter 3: Science
Chapter 4: Guidance for LCPs
Chapter 5: Guidance for CDPs
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Appendices

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Appendix B: Coastal Engineering
Appendix C: Adaptation Options
Appendix D: LCP Resources
Appendix E: Other Agencies' Programs
Appendix F: Coastal Act Policies

About the Draft Document

IT ***IS***	IT IS ***NOT***
Draft	Final
Draft Guidance for addressing Sea-Level Rise in conformance with the Coastal Act	New regulations
Complement to other Commission materials	Replacement for other Commission materials
Multi-purpose guidance in which users may focus on particular chapters	Meant to be read cover to cover
A list of sea-level rise adaptation options to choose from	A checklist of adaptation measures where all items have to be accomplished
A living document	Static

Goals of the Document

- Address sea-level rise in California
- Coastal Act: Minimize hazards and impacts to coastal resources due to sea-level rise
- Fulfill Strategic Plan item 3.1.1

Surf scene, San Diego | Nathan Rupert

Impacts to California

Pasture near Liscom Slough, Arcata CA | Dec 2012


Sunset Beach, CA| Dec 2012
FLOODED
CA King Tides Initiative | Mario Fernandez


Bolinas, Marin County | Dec 2011
CA King Tides Initiative | nnmoor


Highway 1 at Surfer's Beach, Half Moon Bay | Feb 2011
CA King Tides Initiative | JSutton8


Pacifica, CA
Photo by L Ewing

CA King Tides Initiative| Dan Jarvis

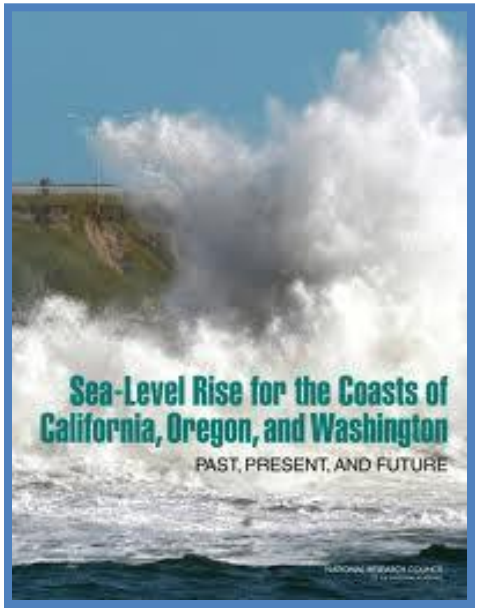
Oceanside, CA | May 2009

Sea-Level Rise Science and Projections

Best Available Science on SLR

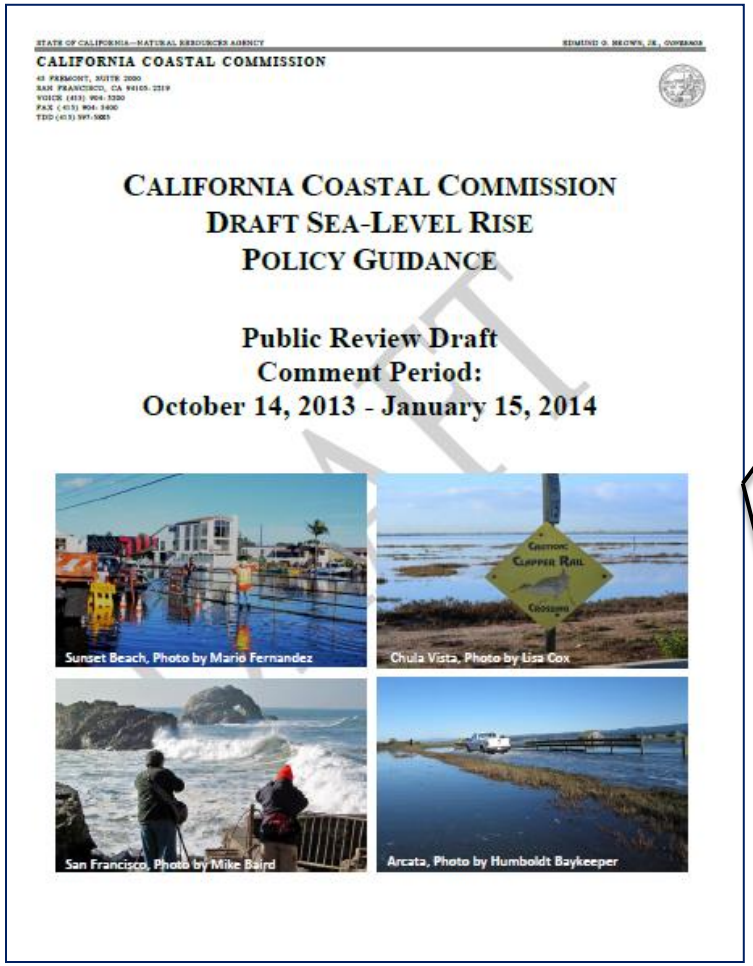
- National Research Council Report SLR Projections for California

Time Period	South of Cape Mendocino	North of Cape Mendocino
2000-2030	4 – 30 cm (1.5 – 12 inches)	-4 – +23 cm (-1.5 – 9 inches)
2000-2050	12 – 61 cm (5 – 24 inches)	-3 – + 48 cm (-1.2 – 19 inches)
2000-2100	42 – 167 cm (17 – 66 inches)	10 – 143 cm (3.6 – 56 inches)



- Most locations can use these projections without modification
- Humboldt Bay & Eel River Sea Level Rise
  - SLR is at faster rate than region North of Cape Mendocino
  - Modify projections to account for local vertical land motion

Applications of Best Science



STATE OF CALIFORNIA—NATURAL RESOURCES AGENCY EDMUND G. BROWN, JR., GOVERNOR

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DRAFT SEA-LEVEL RISE
POLICY GUIDANCE

Public Review Draft
Comment Period:
October 14, 2013 - January 15, 2014

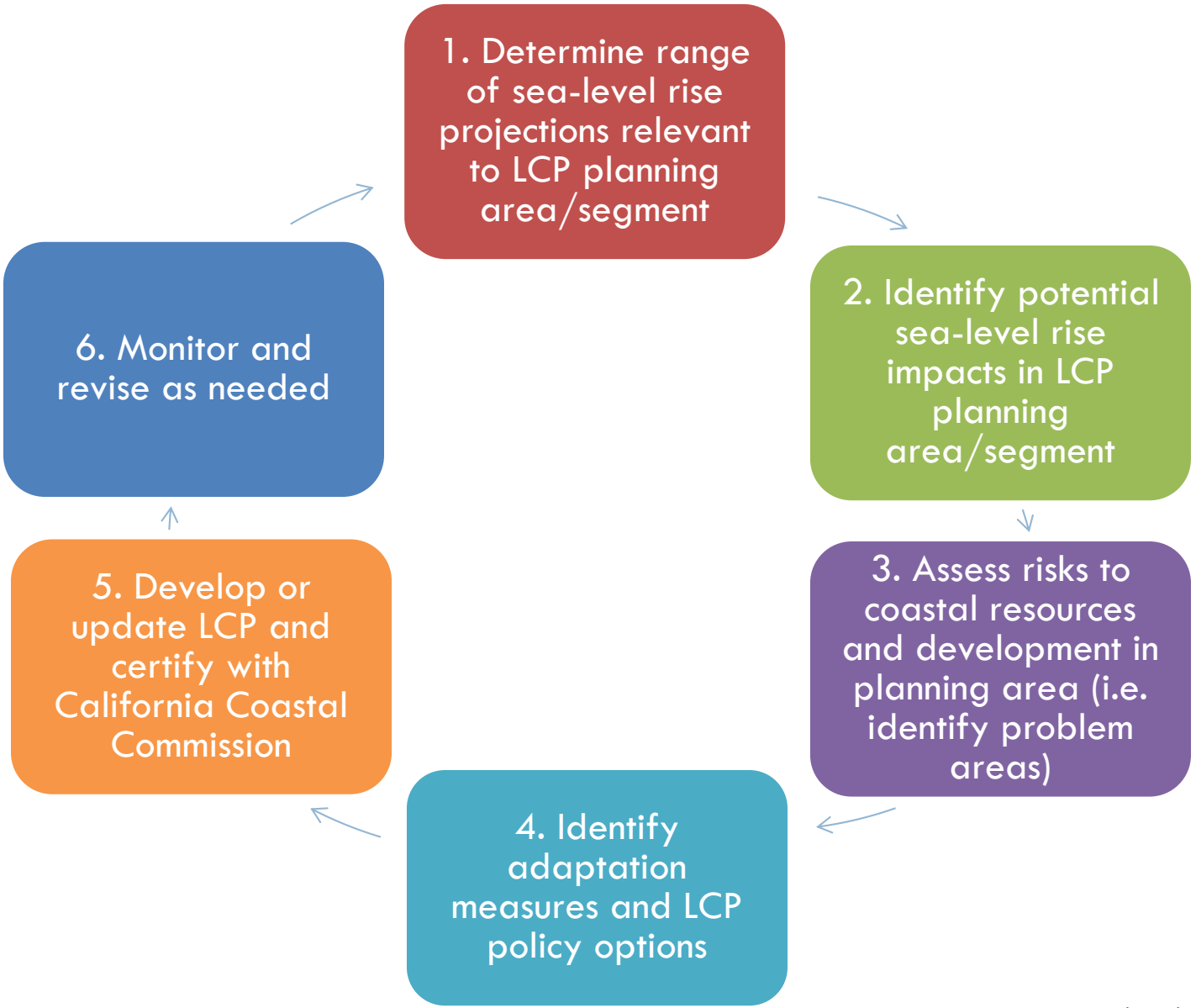
DRAFT

Local Coastal Programs

Long-Range Development Plans
Port Master Plans
Federal Consistency

Coastal Development Permits

Steps for Addressing SLR in LCPs



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Steps for Addressing SLR in CDPs

1. Establish the projected sea-level rise range for the proposed project
2. Determine how sea-level rise impacts may constrain the project site
3. Determine how the project may impact coastal resources over time, considering SLR
4. Identify project design alternatives to both avoid resource impacts and minimize risks to the project
5. Finalize project design and submit permit application

CDP Analysis of Sea-Level Rise

General Situations for considering sea-level rise:

- On or near a floodplain, beach, wetland, lagoon or estuary
- Exposed to wave impacts or wave runup
- Protected by levees, dikes, bulkheads, seawalls, etc.
- On an eroding coastal bluff
- Reliant on shallow water well for water supply

Coastal dunes, Humboldt Bay | Lesley Ewing

CDP Step 1: Determine SLR Projections

Expected Outcomes:

- Proposed project life
- Scenarios of SLR for use in project analysis

Time Period *	South of Cape Mendocino	North of Cape Mendocino
by 2030	4 – 30 cm **(1.5 – 12 inches)**	-4 – +23 cm **(-1.5 – 9 inches)**
by 2050	12 – 61 cm **(5 – 24 inches)**	-3 – +48 cm **(-1.2 – 19 inches)**
by 2100	42 – 167 cm **(17 – 66 inches)**	10 – 143 cm **(3.6 – 56 inches)**
* with year 2000 as a baseline		

Levees along Wintersberg Channel, Huntington Beach | Lesley Ewing

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Tomales Bay Wetland Restoration | CA King Tides Initiative | Jan 2012 | Sarah Allen

Scenario Based Planning: A tool for developing science-based decisionmaking framework to address SLR uncertainty. Used to inform decision making refarging the range of impacts and vulnerabilities. (Adapted from NOAA 2010)

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CDP Step 2: Identify SLR Impacts & Constraints

Hazard Analysis Types:

- Geologic Stability
- Erosion
- Waves and wave runup
- Flooding and inundation

Expected Outcomes:

- Maps of site-specific hazards
- Areas that can safely support development

Highway 1 near Pescadero, San Mateo County | Lesley Ewing

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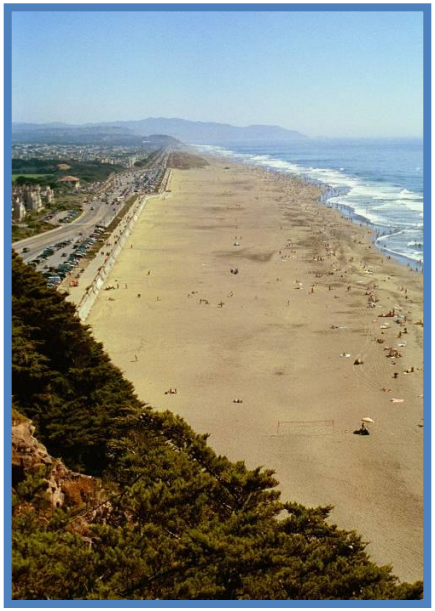
CDP Step 3: Assess Impacts to Coastal Resources

Coastal Resources to Consider:

- Public access, beaches, recreation areas
- California Coastal Trail
- Wetlands, ESHA, other habitats
- Agricultural areas
- Cultural sites
- Coastal-dependent uses
- Critical infrastructure
- Coastal Highway 1
- Existing and new development



Ocean Beach, San Francisco | Lesley Ewing

Expected Outcomes:

SLR risks to coastal resources; map overlaying development and resource constraints

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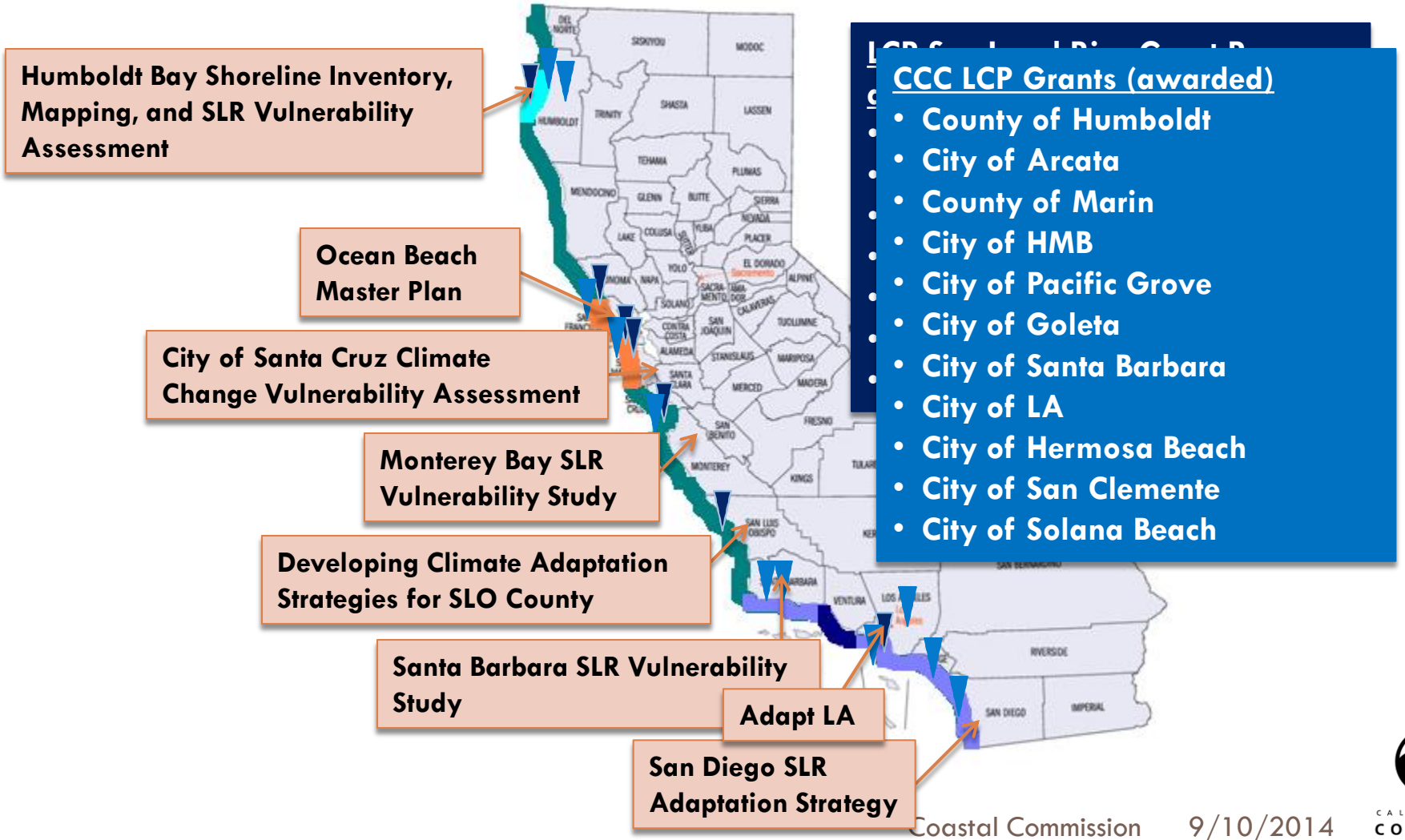
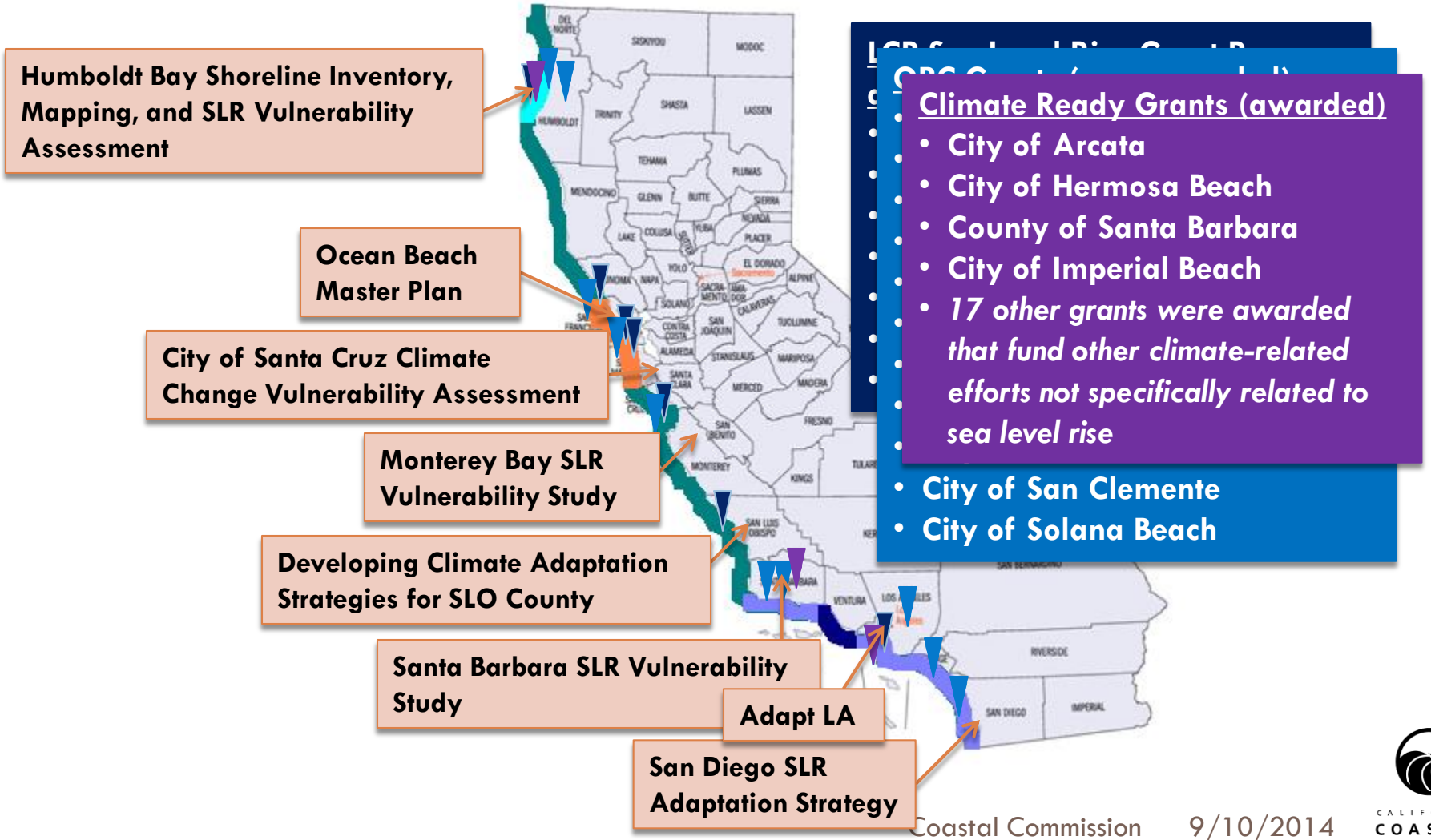
Tools and Resources

Tools and Resources



Tools and Resources



CDP Step 4: Identify Project Alternatives

Surfers Point Managed Retreat Project, Ventura, CA

Expected Outcomes:

- Project modifications and reexamination of impacts
- 1+ project alternatives
- Possible adaptation options

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CDP Step 5: Finalize Application

Expected Outcomes:

- Analysis of sea-level rise concerns for inclusion in a CDP application
- Combine with other application items for a complete submittal

Pacifica State Beach, Linda Mar Area, Pacifica, CA

How is California addressing sea-level rise?

- Statewide efforts
  - 2014 Safeguarding California Plan (update to 2009 Plan)
  - General Plan Guidelines (2014 Update in progress)
  - OES State Hazard Mitigation Plan (update in progress)
  - OPC: 2013 State SLR Guidance
  - 2012 Adaptation Planning Guide
  - CCC, OPC and Climate Ready Grants
- California Coastal Commission efforts
  - Local Coastal Programs & Coastal Development Permits
  - Strategic Plan
  - Draft SLR Policy Guidance

Next Steps

Outreach To date:

- 120-day comment period
- 3 webinars
- 14 in-person meetings
- District office meetings
- 350+ people

Next Steps:

- Revised Draft to Commission, likely this fall
- Trainings and symposia
- Grant support for local governments
- Targeted interest groups

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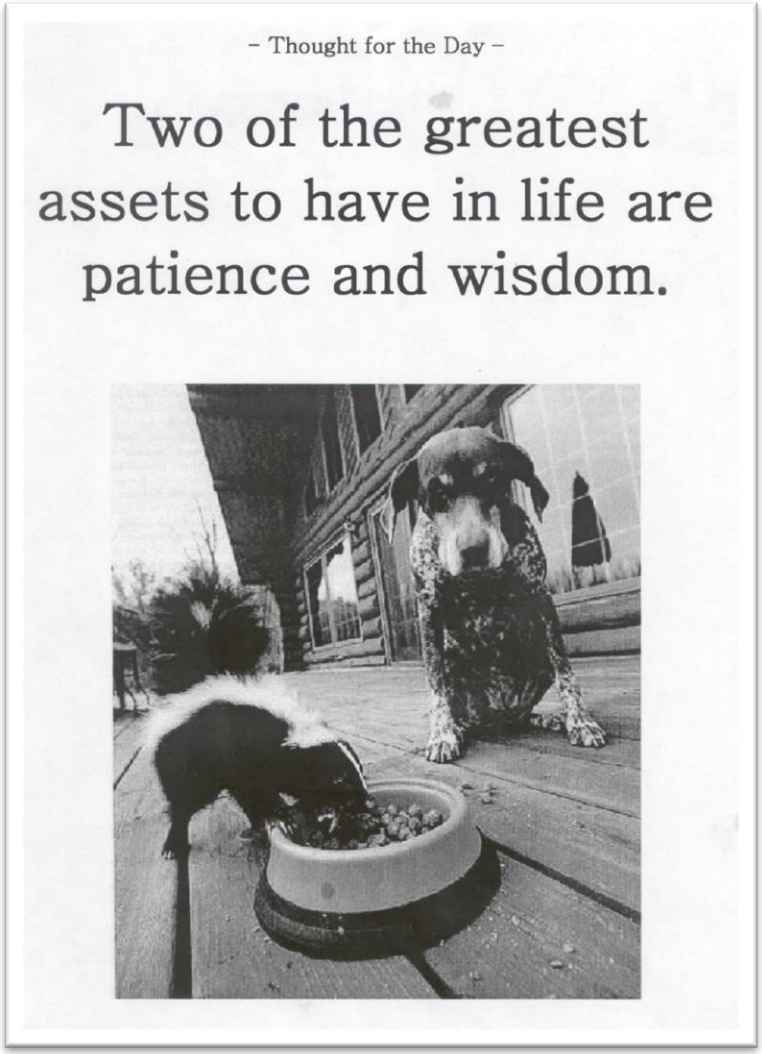
Additional Research Needs

- Baseline Data and Monitoring Systems
  - Various Temporal and Spatial Scales
  - Cumulative impacts
- Modelling Sea Level Rise-related Impacts
  - Fluvial – Sea Level Dynamics
- Habitat Evolution Models & Habitat Buffers
- Vertical Land Motion inclusion for Local Analyses
- Future Erosion
  - Sea Level Rise
  - Changing Storminess
- Review of Overtopping methods
- Impacts to Coastal Aquifers
- Case studies
  - Living shorelines
  - Nature-based shore protection
  - Habitat Protection

Thank you for your attention



California Coastal Commission,
Draft Sea Level Rise Policy Guidance:
http://www.coastal.ca.gov/climate/SLRguidance.html

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